

ALBA 'SPRITE' transistor portable receiver

THIS is a six-transistor personal portable receiver. It has continuous coverage of the medium waveband and a switched long wave position around 1500m for reception of the Light Programme. A socket is provided for an earphone plug for personal listening.

The second i.f. stage has a.g.c. derived from an OA90 diode which is also the detector. The circuitry is largely conventional and the output stage is a single-ended Class B push-pull circuit. Power is provided by a 9V battery.

The ferrite rod aerial is coupled via L1 and L2 to the base of the self-oscillating additive mixer Tr1. The i.f. signal

appears in the collector circuit and is passed to the base of Tr2 via i.f.t.1. The i.f. signal is amplified by Tr2 and passes from its collector circuit via i.f.t.2 to the detector diode D1. The detected audio output is fed to the volume control RV1 and from there to the driver stage Tr4. The output transistors Tr5 and Tr6 are driven from Tr4 via transformer T1. The loudspeaker is connected to Tr5 and Tr6 via a capacitor and has a high impedance speech coil winding.

BASIC DATA

Transistors: OC44 (frequency-changer); OC45 (first i.f. amplifier); OC45 (second i.f. amplifier); OC81D (driver); two OC81 (push-pull output pair).

Diode: OA90

Volume Control: 5k log.

Intermediate Frequency: 470kc/s.

Electrolytics: Two 45 μ F 9V; one 8 μ F 9V; one 32 μ F 6V.

Battery: PP3 or equivalent.

DISMANTLING

Access to the battery may be obtained by inserting a coin in the lower of the two slots at the loudspeaker end of the casing and twisting it. The compartment will then hinge open.

To remove the complete base section of the casing, insert the coin in the upper slot and twist it. This will expose the copper side of the printed board and

RELEASE DATE AND ORIGINAL PRICES

March 1962

10gn (£8 3s. 0d. plus tax)

De-luxe version

11½gn (£9 9s. 2d. plus tax)

give access to the screws of trimmers C2A and C3A.

To remove the complete circuit board, first remove the tuning knob (by pulling it off). On some models, this will expose a bolt with a countersunk head. This should be removed. Next, remove the Philips-head screw which fastens the printed board to a pillar in the moulding. The board can then be removed to the extent of the loudspeaker leads by easing it out of the two spring clips at the loudspeaker end of the casing.

ALIGNMENT PROCEDURE

It is necessary to remove the printed board completely from the case. Connect an output meter with an impedance of 80 Ω in place of the loudspeaker and set it to a range having an f.s.d. of about 100mW. Alternatively, insert a milliammeter in series with the negative battery lead and leave the loudspeaker connected.

Rotate the tuning capacitor to a quiet position at the l.f. end of the medium waveband and turn the volume control to maximum. Connect the signal generator to the base of Tr1 (the orange lead from the ferrite-rod aerial assembly) via a capacitor of 0.1 μ F. The earthy side of the generator should be connected to the positive line of the receiver.

Inject a signal at 470kc/s (30%

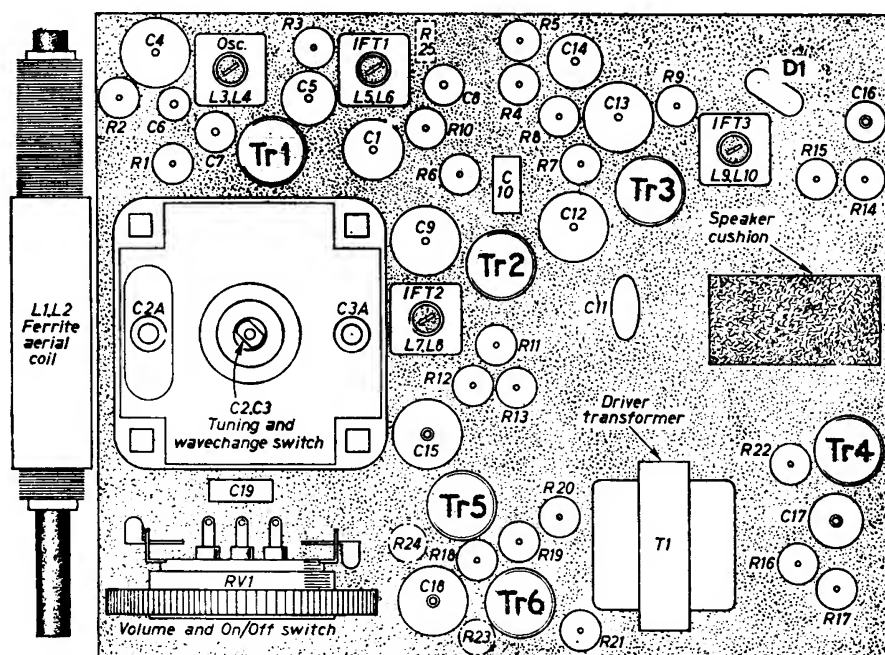


Fig. 1—Layout of parts on the printed board.

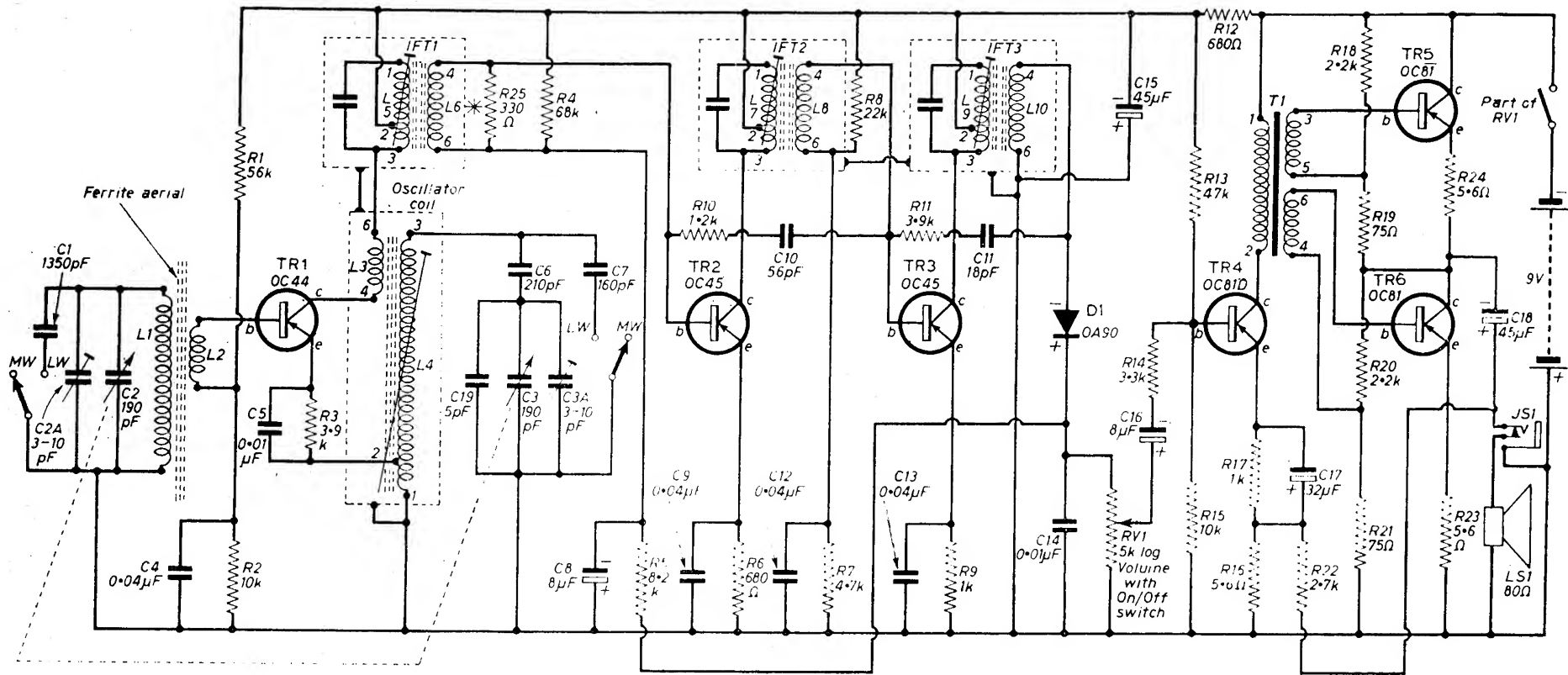


Fig. 2—Circuit diagram of the receiver.

modulated) and trim the cores of i.f.t. 3, i.f.t. 2 and i.f.t. 1, in that order, for maximum output. Reduce the level of the signal from the generator as the circuits come into line. Repeat the adjustments until no further improvement is apparent. Check that an output of 50mW is obtained for an input of 15μV or less and then switch off and remove the signal generator.

R.F. alignment

For this part of the alignment, it is necessary to provide a calibration scale for the tuning capacitor. This may be done by tracing the scale positions on to a piece of paper which can be fixed to a piece of thin card. The fixing screw hole may be used as a locating point.

The signal generator should be connected to 4 or 5 turns of insulated wire

about 8in or 10in in diameter, including in series with the live lead a resistor of 200Ω to 300Ω. This coupling loop should be placed on the axis of the ferrite-rod aerial and about 1ft away.

Tune the receiver to 500m and inject a signal (modulated) of 600kc/s. Trim the oscillator coil L3 for maximum output. Then slide the coil L1 along the ferrite rod for maximum.

Tune the receiver to 200m and the signal generator to 1500kc/s. Adjust C3A for maximum output followed by the aerial trimmer C2A. Repeat all the above sequence of operations.

Rotate the tuning capacitor to actuate the long wave switch and check that the Light Programme is received in the 1500m sector.

VOLTAGES

Transistor	V _e	V _b	V _c
Tr1	1.1	0.95	7.0
Tr2	0.6	0.7	7.0
Tr3	0.95	1.05	7.0
Tr4	0.95	0.9	8.4
Tr5	4.4	4.5	9.0
Tr6	—	0.15	4.4

The above readings are with respect to the positive connection of the battery and were obtained using a 20k/V meter on the 2.5V and 10V ranges. The volume control was at maximum and the receiver was tuned to a quiet position in the long wave sector.

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